Summary Highlights of the High school Mathematics Survey Responses from Teachers, Principals, and Superintendents

1. **As of September 16, 2015**, the Math survey for High school Teachers and Principals had 773 respondents to eight questions designed by the Academic Standards Review Commission.

2. Out of the **773 respondents**, **672 were high school Math teachers or 89.6% of total respondents**. (Other respondents were 60 Principals, and 18 Superintendents.)

3. Out of the **773 respondents**, 517 people or **69% have expressed a preference that High school Mathematics be sequenced in the traditional manner of "Algebra I, Algebra II, and Geometry"** while 191 respondents or 25.5% prefer to continue the integrated sequence of "Math I, Math II, Math III" of the Common Core. (5.5% or 41 respondents indicated "Other" on the survey.)

4. The respondents cited the following **top reasons** as they weighed in on returning to the (A) traditional sequence or, maintaining the (B) integrated sequence of the Common Core for Math classes in high school:

376 or **50.3%** The traditional math sequence is better for students.

367 or **49.1%** Sufficient resources do not exist to support Math I, II, and III.

314 or **42%** Achievement results will be better with traditional math sequence.

230 or **30.7%** Sufficient resources exist to support the traditional sequence of Algebra I, II, and Geometry

176 or **23.5%** Professional Development/Training has been poorly implemented.

142 or **19%** The integrated Math sequence is better for students.

112 or **15%** Professional Development/Training is needed.

98 or **13.1%** Other

82 or **11%** Achievement results will be better with the integrated Math sequence.

52 or **7%** Sufficient resources exist to support Math I, II, and III.

34 or **4.5%** Professional Development/Training has been well implemented.

21 or **2.8%** Professional Development/Training is fully in place.

16 or **2.1%** Sufficient resources do not exist to support the traditional sequence of Algebra I, II and Geometry

5. In the event that a transition back to the traditional model were to occur for HS Math classes, **311 respondents or 41.6% said it would take one academic year to transition**; 181 respondents or 24.2% said it would take two academic years to accomplish such; 163 respondents or 21.8% said it would take three academic years, and 92 respondents or 12.3% stated "Other."

6. While many survey respondents commented that they do not foresee any problems in the event of a transition back to the traditional Math sequence, **other respondents identified the following problems that may potentially occur** as a result of a transition back to the traditional Math sequence:

   A. Lack of resources. Under the traditional sequence, textbooks are in short supply that teachers cannot provide a personal copy to each student. Even electronic forms of textbooks require licenses which cost LEAs thousands of dollar per year. With the integrated sequence, students are able to procure their own personal copies of course material in both paper and electronic formats, free of charge. Students could even use an electronic version of the integrated sequence material on a tablet or similar device for an entire year without ever having to use one sheet of paper The State needs to include money for new textbooks and ready by the time school opens.

   B. Lack of assurance that teachers will be properly trained and have sufficient time to be familiarized with the textbook and resources

   C. Difficulty in teaching two curriculums within the department for 2-3 years it takes to make sure that each student finishes the program that they started.

   D. Gaps in student learning. Some students who are currently in Math 2 or 3 do not have the skills for pre-Calculus/AFM as students completing the traditional model.

   E. Smaller schools would have a more difficult time to offer courses from both sequences which is likely to happen if schools returned to the traditional model while allowing other students to complete what they started with the integrated sequence. For example, HS students currently on the Math II and III sequence need to be able to finish that sequence prior to graduation.

   F. Teachers will have to teach more topics to fill in the gaps.

   G. Teacher burn-out. Teachers have invested in countless unpaid hours to gather and learn the new standards, especially since the lack of textbooks remained a common concern. To return to the traditional sequence is going to frustrate teachers and students alike.

   H. Confusion will lead to great Math teachers to leave the field.

I. Overlap of students' schedules and/or transcripts, and that classes may not satisfy graduation requirements or college acceptance.

7. On the other hand, **survey respondents also identified probable solutions** to assist in ensuring graduation requirements for high school students in the event that a transition back to the traditional Math sequence were to occur:

A. Students that have started the integrated sequence/Common Core should graduate with the same series of classes. Freshmen should begin with the traditional Math sequence.

B. Both sequences should be used during the transition year.

C. Schools will need to run both traditional and integrated pathways for a year or two in order to get current students through the integrated path.

D. Begin initial transition at the middle school level.

E. Implement the changes based on student classification. Incoming 9^{th} graders would have a different standard than 10, 11, and 12^{th} graders.

F. Phase out Math I, Math II, and Math III over a 2 to 3-year period.

G. The transition should be a grandfather type---which means that graduation requirements may be different for three to four years in a row but, it will make the transition easier for students and teachers.

H. Stagger the transition to allow less students with gaps. The first year, change the Math I back to Algebra 1, the second year—offer Algebra 1 and Geometry, and the third year, offer Algebra 1, Geometry, and Algebra 2.

I. Transition courses to fill in the gaps.

J. Design "skinny" courses (45 minutes/day) to gain credit in areas, and design specific courses to fill gaps until the transition is complete.

K. Tutoring and extra class for those who are behind. Offer courses in the summer or, use virtual schools for students that can handle it. Online opportunities and creative scheduling to address any gaps.

L. Teachers would need to review, as needed, or practice in depth as those gaps appear, and fill in missing pieces as best as they can to ensure that students have necessary parts for college and workforce readiness.

M. Create a detailed curriculum that overlaps areas of change to make sure all topics and sections of Math are taught. Have students take a placement test.

N. Use the 4th level Math courses to cover any gaps or, to address the issue earlier---use foundation of Math-type courses.

O. Allow Math credits for remedial Math courses and Math-related electives as another pathway option.

P. Make sure that all students have the foundation of Algebra and Geometry.

Q. Do away with testing for the next three years, and that would take the pressure off both the students and teachers. The tests seem to be out of sync with the curriculum anyway, as evidenced by the scaling of the scores.

R. Sequencing should be in line with what the colleges and universities are looking for in high school transcripts for entering freshmen, not what has been made up in the state. Identify what the colleges are seeking, and use that to help define our graduation requirements.

8. When survey respondents were asked to identify the adequate number of years that they think should be allowed to transpire with regard to formal, summative assessments such as the End-of-Course Tests (or, North Carolina Final Exams) in order to close achievement gaps, and in the event of a transition to the traditional Math sequence, they responded in the following manner:

One Year –	126 (17.2%)
Two Years -	257 (35.1%)
Three Years -	290 (39.6%)
Other -	59 (8.1%)

9. Survey respondents also provided their insights and additional information that they believe should be considered regarding the sequencing of high school Math courses in North Carolina schools. **Their most frequently cited comments were of the following themes and messages**:

A. "Please stop changing the curriculum and get us resources."

B. "The solution is not to change it back to the traditional Math sequence. The students have not been doing Math I, II, and III long enough for us to throw in the towel."

C. “The main failure of the revised sequence is that there are way too many topics to adequately cover in 90 days. On a traditional school calendar, the 1,2,3 sequence would have worked better. Most PD has been worthless.”
D. “Not enough time to cover the material required under the integrated sequence, and much less in an in depth manner. We are teaching in 18 weeks what we used to teach in about 30.”

E. “The common core sequence is great in theory but it has not been implemented well, and the Math comes across as more random to the students when we cover so many topics in a single class, instead of focusing on mastery.”

F. “The focus has been on working problems, not proper sequencing, and pacing which was a major flaw in the implementation.”

G. “The integrated Math sequence is too ‘jumpy and disjointed’ for students. There is an urgency to move through all of the materials, and so the students have been exposed to each topic that may be on the exam. On the other hand, students have a better opportunity to master the materials when each course is taught separately in a semester.”

H. “The curriculum of the integrated sequence was written using complex verbiage, making it difficult to interpret.”

I. “Please do not switch back. We haven’t had time to see if it really works, and the students will completely lose out on statistics in the traditional pathway.”

J. “The NCFE’s are way too short to adequately evaluate all course standards. The current test results are really a measure of which standards the teacher guessed right as far as emphasis as opposed to comprehensive course evaluation. Basically, the results from the Math NCFE’s cannot really be taken seriously as a result.”

K. “I feel as if I’m preparing my students for test and not for the next Math course.”

L. “Students transferring in from other states are having difficulty transitioning into the Math 1, 2, and 3 sequence. That is a huge problem since we have a military base in our county. These students are having to take an extra Math class to be able to cover all of the objectives without a having a gap in their knowledge.”

M. “The integrated Math sequence is best for students as we are progressing into a technology-based learning society. The traditional Math sequence should also be offered for students who are rooted in the ‘arts’. Schools should offer both tracks.”

N. “There needs to be a realization that not every child is going to college, and we need alternatives to Math 2 and Math 3/Geometry and Algebra 2.”

O. “To switch back now to the traditional sequence will greatly hurt the State’s credibility, and any trust that the teachers have.”

P. “Professional development should be offered so that teachers understand that even though we are moving back to the traditional sequence that they should still be utilizing the instructional strategies from Common Core. Students should be working together and collaborating. They should be seeing higher level problems and word problems, not just a problem that asks them to solve for a specific variable.”

Q. “Teachers have spent a lot of time developing activities, lessons, professional development for Math 1, 2, and 3. We have not had enough time to see this curriculum work.”

R. “There has been significant work done on creating a 4th Math course to deal with the overlap in Math 3 and Discree/AFM. We need more options for a fourth Math in this interim period for students who struggle with the Common Core curriculum. We also need a fourth Math that includes a significant amount of financial literacy and Math as this is the biggest life skill that our students lack.”

S. “Wake County has done a very poor job of interpreting the integrated Math standards and appropriately distributing those standards throughout Math 1, 2, and 3. Because of this, there are key concepts that many students have not been taught that are absolutely necessary for higher-level Math such as pre-Calculus and beyond. The traditional sequence offers a solid set of known and agreeable standards that properly prepare students for higher level Math courses that produce college-ready students.”

T. “Math 1, 2, and 3 are courses that seemed to have been developed as we were teaching them. They should have been tested and a specific curriculum established before launch. There are huge gaps in this sequence. The students are not coming out of Math 3 knowing what they should know as they did with the traditional sequence.”

U. “The integrated courses are less rigorous than the previous traditional sequencing. Students are not expected to know why things are what they are but just how to do problems. This is mostly because the standards do not align correctly. For example, there are standards expected to be covered in Math 2 that require prerequisite knowledge to fully understand but, the prerequisite standards are not taught until Math 3.”

V. “As an experienced teacher, I found especially the lower level student achieved more on the Algebra 1, 2, and Geometry sequence.”

W. “Geometry is not getting enough attention in the integrated system.”

X. “It makes no sense to separate Geometry and Algebra. They should be integrated as many geometry problems require strong algebra skills to solve. Both subjects should be taught/learned and developed together.”

Y. “Common core/Integrated Math is not working in the real classroom. We are not teaching the geometry content that needed by the students. There has been a greater emphasis on algebra and not so much on geometry.” “The integrated Math does not have sufficient coverage of geometry for students to do well on SAT and ACT.”

Z. “There needs to be Math-standardized testing at the state level to hold students and teachers ‘accountable’ despite the fact that creativity in the classroom, and more non-traditional approaches to learning are better suited for student learning and interest in the Math topics are presented. I believe any state testing beyond the mandatory Math 1 is a waste of money, and is not good for students, teachers, or culture of the school.”